

# CIOReview

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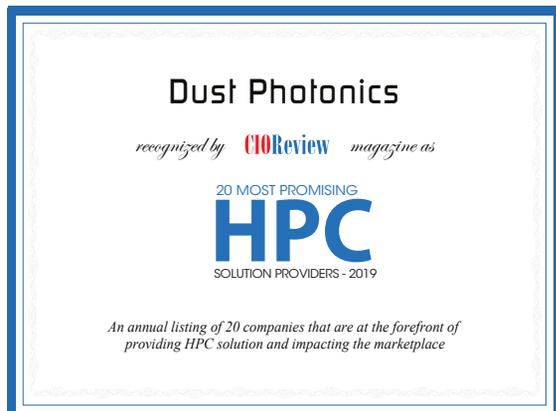
## 20 Most Promising HPC Solution Providers - 2019

The “Big Bang,” or the initial expansion of all energy and matter in the universe, happened more than 13 billion years ago in trillion-degree Celsius temperatures but High Performance Computing simulations make it possible to observe the occurrences during the universe’s birth. HPC systems can handle more complex queries, more variables and faster turnaround requirements.

Seymour Roger Cray, the supercomputer architect who founded Cray Research, considered by many as the father of supercomputers once said, “Anyone can build a fast CPU. The trick is to build a fast system.” Likewise, there is great value in the ability to access large data sets, but there is additional value to the data analyst in the ability to do so with extreme speed.

HPC has also been the topic of discussion amongst corporate circles from sometime. Organizations from a variety of market segments have been leveraging HPC technologies to tackle big data analytics workloads effectively. The Internet of Things (IoT) has ushered in the age of Big Data – large volumes and disparate types of enterprise information that reaches a point where normal computing approaches no longer suffice. Whilst this is the case today, to help companies better understand, leverage and tap into their data, HPC can play a big role.

This magazine is an attempt to get the top players in this space creating a difference. We hope you enjoy this edition as much as we enjoyed putting this together.



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**Company:**  
Dust Photonics

**Description:**  
The firm designs and manufactures high-end optical transceivers for Datacenters, HPC and Cloud providers

**Key Person:**  
Ben Rubovitch  
CEO

**Website:**  
[dustphotonics.com](http://dustphotonics.com)

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# DustPhotonics

## High Speed and Bigger Pipes—No Longer Problematic!

There has been a rapid growth in the amount of computing horsepower flowing through data centers and the high-performance computing (HPC) ecosystem. Driven by the endless benefits of processing performance, power optimization, and architectural innovation—high-end optical transceivers and “bigger pipes” have become the need of the hour. Data rates have gone from 10G to 100G, having made a significant jump to 400G with 800G looming just over the horizon. Although actual optical devices will have a higher price per unit, organizations ache for lower costs per bit (\$/G) and power per bit (W/G). Founded in 2017, DustPhotonics designs and manufactures high-end optical transceivers powered by their proprietary AuraDP™ technology that is designed for

**AuraDP™ is a revolutionary technology that reduces the complexity of coupling the optical devices to the fiber enabling high volume manufacturing and reducing power, heat and improving reliability**

low-cost, high volume manufacturing. The company aims to target the “Bigger Pipes - Bigger Problems” complexity with their high-speed next-generation data center optics. DustPhotonics notes, “With an increase in speed comes increased complexity, an increase in power, and an implied lowering of mean time to failure (MTTF).” These factors impress a severe challenge on data centers with their high-volume optical connectivity. While HPC doesn’t have the data center connectivity volume, connectivity failure in a multimillion-dollar system is not allowed within the life of the machine. “Our technology allows the maximum coupling of light energy between the optics to the fiber thereby reducing power, optical device temperature and improving

MTTF for all data rates,” says Ben Rubovitch, the CEO of DustPhotonics.

Performance is paramount, and links of 100G and 400G must have bit error rates of 10E-8. This reduces the requirements of forward error correction (FEC), adding an overhead of up to 10 percent of the data and increases latency, with link lengths extending beyond 100m to up to 300m on multimode fiber. “We address this by providing 100G and 400G Active Optical Cable (AOC) solutions to assure performance that transceivers and cables on their own cannot,” says Rubovitch. He continues, “AuraDP™ is a revolutionary technology that reduces the complexity of coupling the optical devices to the fiber enabling high volume manufacturing and reducing power, heat and improving reliability.” It is a multimode fiber alignment technology for short and mid-range fiber lengths of up to 300m. This is where the majority of connectivity occurs in the data center – from server to Top of Rack (ToR) switches and from ToR to Leaf switches.

Traditionally, competing in an MSA compliant based market is dependent on price, all related to driving volumes and lowering the cost of goods sold (COGS). However, the continual drive to zero doesn’t benefit the customer or supplier. While the price is a key factor, Dust differentiates itself based on the economic value of lower power and better reliability, each of which lowers the total cost of ownership (TCO). With reliability, there is the tangible cost of reduced sparing and time to repair and the intangible costs of downtime, which can be enormous depending on the service affected. Also, the firm is more of a strategic partner and not just a vendor of optical modules. “We can enable the next revolution of optical and semiconductor co-package and dramatically reduce power and TCO,” asserts Rubovitch.

The firm envisions expanding beyond 400G multimode fiber to 400G and 800G single mode fiber solutions as well as optical and silicon switch co-package integration by leveraging their silicon photonics and fiber alignment technologies. “The future is about bigger pipes and solving the problems they bring to optical connectivity. For Dust, this is our wheelhouse,” concludes Rubovitch. 



Ben Rubovitch